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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/747,928	12/27/2000	Byung-Young Ahn	3430-0140P	3449

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EXAMINER	
TRAN, BINH X	
ART UNIT	**PAPER NUMBER**
1765	9

DATE MAILED: 03/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/747,928	AHN, BYUNG-YOUNG	
	Examiner	Art Unit	
	Binh X Tran	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *24 December 2002* .

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-17,19 and 20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-17,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 December 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 17, 19, 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Dhindsa et al. (US 5,904,779).

Dhindsa discloses a method of processing a substrate comprising:

providing an electrode plate (206);

positioning a substrate (208) at a predetermined distance from the electrode plate (122) to obtain an intermediate structure (Fig 4-6);

processing the intermediate structure;

removing the substrate from the electrode plate (abstract).

Dhindsa further discloses that the sticking force (read on "electrostatic attraction between the substrate and the electrode plate") is depending on the distance (i.e., position) and this sticking force can be reduced (col. 5 lines 14-55)

Respect to claim 19, Dhindsa teaches the step of positioned the substrate at the predetermined position from the electrode plate (206) by placing an intermediate

material (210) between the substrate (208) and electrode plate (Fig 2A, col. 4 lines 6-15).

Respect to claim 20, Dhindsa teaches the step of:

providing an electrode;

providing an intermediate material (210) on the electrode (Fig 2A);

providing a substrate on the intermediate material (210)l of the electrode to obtain an intermediate structure and processing the intermediate structure (Fig 2A);

processing the intermediate structure;

removing the substrate from the electrode using a plurality of pins (218) formed on the electrode to push the substrate away from the electrode (Fig 3-5).

Dhindsa does not explicitly disclose the intermediate material (210) reduces the electrostatic attraction between the substrate and the electrode. However Dhindsa discloses that the sticking force (read on electrostatic attraction between the substrate and the electrode) can be reduced. Dhindsa further discloses that the intermediate material (210) is used for electrically insulating the chuck from the substrate (col. 4 lines 11-13). Since Dhindsa teaches the same method using the same device, the examiner interprets that the intermediate material inherently reduces electrostatic attraction between the substrate and the electrode.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 7-10, 12, 14, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa in view of Kanno (US 6,243,251) and further in view of Nakamura (US 6,096,572).

Dhindsa discloses a method comprising an apparatus having:

a process chamber (202) having a gas inlet, the gas inlet allowing a reactive gas (i.e. plasma) into the process chamber;

a first electrode arranged at a predetermined location in the process chamber (col. 4 lines 1-2);

a second electrode (206) in the chamber spaced apart from and opposite to the first electrode, having insulating film (210), a plurality of lift pins (218) received in a plurality of holes, the insulating material (210) being arranged between the plurality of lift pins (See Fig 2a-2c)

a power source (RF source, see col. 4 lines 2, and electrical connecting arrangement 224) for applying voltage to the first and second electrode;

arranging the substrate (208) on the second electrode (206);

dry etching the substrate (col. 3 lines 60-67);

separating the substrate from the second electrode (206) using the lift pins (218) (see fig 3-6).

Dhindsa fails to disclose that the insulating material (210) is an insulating tape and it reduces an electrostatic attraction between the second electrode (206) and the substrate (208). However, Dhindsa clearly discloses that the sticking force (electrostatic

attraction) can be reduced. In a semiconductor method, Kanno discloses the use of adhesive layer (36) (read on the limitation of "insulating tape") on the electrostatic chuck to reduce the residual attracting force (abstract, col. 17 lines 55 to col. 18). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Dhindsa in view of Kanno by using the adhesive layer because it will help to reduce the attracting force.

Both Dhindsa and Kanno do not explicitly use the term "array substrate" in their invention. Nakamura teaches the substrate can be array substrate. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Dhindsa and Kanno in view of Nakamura by using array substrate because equivalent and substitution of one for the other would produce an expected result

Respect to claim 8, both Dhindsa and Kanno teaches the process chamber is a vacuum chamber. Respect to claim 9, Kanno teaches adhesive layer (36) is used in the vacuum chamber. Thus, the examiner interprets that Kanno's adhesive layer in the vacuum chamber read on the limitation of "vacuum tape". Respect claim 10, both Dhindsa and Kanno teaches the power source generates RF power (Dhindsa col. 4 lines 1-2; Kanno col. 10 lines 13-25).

Respect to claims 12, 14, Dhindsa teaches that the dry-etching process is plasma and/or reactive ion etching. The limitations of claims 15-16 have been discussed in previous paragraphs.

5. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa, Kanno and Nakamura as applied to claim 7 above and further in view of Collins et al. (US 5,874,361).

Respect to claim 11, Kanno teaches a DC power source (8a/8b) for applying a DC voltage to the lower electrode. Kanno does not teach applying DC voltages to both electrodes. Collins teaches applying DC voltage to upper and lower electrode (Fig 1). It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Dhindsa/ Kanno/ Nakamura in view of Collins by applying DC voltages to both electrodes because it would produce uniform high-density plasma.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dhindsa, Kanno and Nakamura as applied to claim 7 above and further in view of Westwood (US 5,985,104).

Respect to claim 13, Dhindsa does not teach that the dry etching is an ion beam milling etching. However Dhindsa clearly teaches the dry etching process is a RIE. In a semiconductor process, Westwood teaches that RIE can be used instead of ion beam milling. It would have been obvious to one having ordinary skill in the art, at the time of invention, to modify Dhindsa/ Kanno/ Nakamura in view of Westwood by using ion beam milling because equivalent and substitution of one for the other would produce an expected result.

Response to Arguments

7. Applicant's arguments with respect to claims 7-17, 19-20 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X Tran whose telephone number is (703) 308-1867. The examiner can normally be reached on Monday-Thursday and every other Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Benjamin L Utech can be reached on (703) 308-3836. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Binh X. Tran
March 7, 2003

BENJAMIN L. UTECH
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